



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| (51) International Patent Classification ⁷ : H04Q 11/04 | | A1 | (11) International Publication Number: WO 00/70904 |
| | | | (43) International Publication Date: 23 November 2000 (23.11.00) |
| <p>(21) International Application Number: PCT/SE00/00850</p> <p>(22) International Filing Date: 3 May 2000 (03.05.00)</p> <p>(30) Priority Data: 9901607-3 4 May 1999 (04.05.99) SE</p> <p>(71) Applicant (<i>for all designated States except US</i>): NET INSIGHT AB [SE/SE]; P.O. Box 42093, S-126 14 Stockholm (SE).</p> <p>(72) Inventors; and</p> <p>(75) Inventors/Applicants (<i>for US only</i>): <u>DANIELSON</u>, Magnus [SE/SE]; Kyrkvägen 3 A, S-182 74 Stocksund (SE). <u>ROOS</u>, Joachim [SE/SE]; Kristinedalsvägen 32 B, S-131 46 Nacka (SE).</p> <p>(74) Agent: AWAPATENT AB; P.O. Box 45086, S-104 30 Stockholm (SE).</p> | | <p>(81) Designated States: AE, AG, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), DM, DZ, EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (Utility model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report.</i></p> | |
| <p>(54) Title: SWITCH APPARATUS</p> <p>(57) Abstract</p> <p>The present invention refers to an apparatus for time and space switching data from a first and a second input signal to a first and a second output signal, said apparatus comprising at least four switch elements, each having a first and second input port and an output port. Each one of the switch elements comprises switching means arranged to provide for time-switching of data received from said first input port to provide an output referring to said output port and selecting means for defining a signal to be outputted from said output port by selectively combining said output from said switching means and data received via said second input port, the mutual order of said data received via said second port being the same when incorporated into said signal as when received via said input port.</p> | | | |
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/00850

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04Q 11/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| A | WO 9532599 A2 (NOKIA TELECOMMUNICATIONS OY), 30 November 1995 (30.11.95), page 2, line 20 - page 3, line 25, claims 1-11, abstract -- | 1-10 |
| A | IEEE 1355 Tutorial IEEE Std 1355-1995 Networks. Datasheet (online), 25 Oct 1996, (retrived on 2000.07.31). Retrieved from the Internet: <URL:stdsbbs. ieee.org/pub/p1355/tutorial/7-netwrk. pdf> See the whole document -- | 1-10 |
| A | WO 9403021 A1 (NOKIA TELECOMMUNICATIONS OY), 3 February 1994 (03.02.94), abstract -- | 1-10 |

 Further documents are listed in the continuation of Box C. See patent family annex.

- * Special categories of cited documents:
- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

4 August 2000

Date of mailing of the international search report

15 -08- 2000

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Kristoffer Ogebjer/mj
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INTERNATIONAL SEARCH REPORT

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|-------------------------------|
| International application No. |
| PCT/SE 00/00850 |

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| A | <p>"BMSN and SpiderNet as large scale ATM switch interconnection architectures" Cheung, K.Y.; Wong, P.C. Communications, 1997. ICC'97 Montreal, Towards the Knowledge Millennium. 1997 IEEE International Conference on Pages: 472 - 477 vol.1 This Conference was Held : 8-12 June 1997</p> <p>-- -----</p> | 1-10 |

INTERNATIONAL SEARCH REPORT
Information on patent family members

| | |
|----------|---|
| 02/12/99 | International application No. PCT/SE 00/00850 |
|----------|---|

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|--|------------------|---|--|
| WO 9532599 A2 | 30/11/95 | AU 2567795 A EP 0796548 A FI 97845 B,C FI 942435 A | 18/12/95 24/09/97 15/11/96 26/11/95 |
| WO 9403021 A1 | 03/02/94 | AU 671842 B AU 4503793 A DE 69322784 D,T EP 0650652 A,B SE 0650652 T3 FI 91349 B,C FI 923297 D JP 9502310 T NZ 253722 A US 5570358 A | 12/09/96 14/02/94 10/06/99 03/05/95 28/02/94 00/00/00 04/03/97 21/12/95 29/10/96 |

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|---|---|---|
| Applicant's or agent's file reference 2008724 | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No. PCT/SE00/00850 | International filing date (<i>day month year</i>) 03-05-2000 | Priority date (<i>day month year</i>) 04-05-1999 |
| International Patent Classification (IPC) or national classification and IPC7 H04Q 11/04 | | |
| Applicant NET INSIGHT AB et al. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

| | | |
|--|---|---|
| Date of submission of the demand 02-11-2000 | Date of completion of this report 30-08-2001 | |
| Name and mailing address of the IPEA/SE Patent- och registreringsverket Post: 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88 | Telephone: 17 00 99 FAX/REGIS-0 | Authorized officer Kristoffer Ogebjer /itw Telephone No. 08-782 25 00 |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE00/00850

I. Basis of the report

1. With regard to the elements of the international application:^{*} the international application as originally filed the description:pages _____, as originally filed
pages _____, filed with the demand

pages _____, filed with the letter of _____

 the claims:pages _____, as originally filed
pages _____, as amended (together with any statement) under article 19

pages _____, filed with the demand

pages _____, filed with the letter of _____

 the drawings:pages _____, as originally filed
pages _____, filed with the demand

pages _____, filed with the letter of _____

 the sequence listing part of the description:pages _____, as originally filed
pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

 the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

 contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. The amendments have resulted in the cancellation of: the description, pages _____ the claims, Nos. _____ the drawings, sheet/fig _____5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE00/00850

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

| | | | |
|-------------------------------|--------|------|-----|
| Novelty (N) | Claims | 1-10 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | 1-10 | YES |
| | Claims | | NO |
| Industrial applicability (IA) | Claims | 1-10 | YES |
| | Claims | | NO |

2. Citations and explanations (Rule 70.7)

Cited documents in the search report:

D1: WO, A2, 9532599

D2: IEEE 1355 tutorial, 25 Oct. 1996

D3: WO, A1, 9403021

D4: " BMSN and spidernet as large scale ATM switch interconnection architectures" Cheung et al. 8-12 June 1997.

D1 relates to a non-blocking switching network for the cross-connection of transmission signals and especially SDH signals. In the telecommunications field, within transmission technology a shift is being made from manual switching to the use of remote-controlled cross connect equipment for the transmission of time-divided signals in a telecommunications network.

D2 relates to different packet switches, and how they work.

D3 relates to a method for implementing switching in the time domain, and to a method for implementing switching in the space domain, for signals of several different levels of hierarchy, the signals having a common frame structure. An example of such a frame structure is the frame structure of an STM-1 signal used in the SDH system

D4 relates to system that shows how paths can be established and how cells are self-routed through the interconnected fabric.

The documents cited in the International Search Report represent the prior art. The claimed invention stated in claims 1-10 is not considered to be anticipated by these documents.

... / ...

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE00/00850

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V

None of the documents or any relevant combination of them reveal an apparatus for time and space switching data from a first and a second input signal to a first and a second output signal as described by these claims.

According to the arguments stated above, the invention claimed in claims 1-10 is novel, considered to involve an inventive step and have industrial applicability.

PENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|---|--|---|
| Applicant's or agent's file reference 2008724 | FOR FURTHER ACTION | see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. |
| International application No. PCT/SE 00/00850 | International filing date (<i>day/month/year</i>) 3 May 2000 | (Earliest) Priority Date (<i>day/month/year</i>) 4 May 1999 |
| Applicant NET INSIGHT AB et al | | |

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Certain claims were found unsearchable (See Box I).
2. Unity of invention is lacking (See Box II).
3. The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international search was carried out on the basis of the sequence listing
 - filed with the international application.
 - furnished by the applicant separately from the international application,
 - but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
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4. With regard to the title, the text is approved as submitted by the applicant.
 - the text has been established by this Authority to read as follows:
5. With regard to the abstract,
 - the text is approved as submitted by the applicant.
 - the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the drawings to be published with the abstract is:
 - Figure No. 6 as suggested by the applicant.
 - because the applicant failed to suggest a figure.
 - because this figure better characterizes the invention.
 - None of the figures.

INTERNATIONAL SEARCH REPORT

1

International application No.

PCT/SE 00/00850

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04Q 11/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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| A | WO 9532599 A2 (NOKIA TELECOMMUNICATIONS OY), 30 November 1995 (30.11.95), page 2, line 20 - page 3, line 25, claims 1-11, abstract -- | 1-10 |
| A | IEEE 1355 Tutorial IEEE Std 1355-1995 Networks. Datasheet (online), 25 Oct 1996, (retrived on 2000.07.31). Retrived from the Internet: <URL:stdsbbs. ieee.org/pub/p1355/tutorial/7-netwrk. pdf> See the whole document -- | 1-10 |
| A | WO 9403021 A1 (NOKIA TELECOMMUNICATIONS OY), 3 February 1994 (03.02.94), abstract -- | 1-10 |

 Further documents are listed in the continuation of Box C. See patent family annex.

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- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed
- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

4 August 2000

Date of mailing of the international search report

M 5 -08- 2000

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Kristoffer Ogebjer/mj
Telephone No. + 46 8 782 25 00

INTERNATIONAL SEARCH REPORT

2

International application No.

PCT/SE 00/00850

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| A | "BMSN and SpiderNet as large scale ATM switch interconnection architectures" Cheung, K.Y.; Wong, P.C. Communications, 1997. ICC'97 Montreal, Towards the Knowledge Millennium. 1997 IEEE International Conference on Pages: 472 - 477 vol.1 This Conference was Held : 8-12 June 1997 -- ----- | 1-10 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

02/12/99

International application No.

PCT/SE 00/00850

| Patent document cited in search report | Publication date | Patent family member(s) | | Publication date |
|--|------------------|-------------------------|-------|------------------|
| WO 9532599 A2 | 30/11/95 | AU 2567795 A | | 18/12/95 |
| | | EP 0796548 A | | 24/09/97 |
| | | FI 97845 B,C | | 15/11/96 |
| | | FI 942435 A | | 26/11/95 |
| ----- | ----- | ----- | ----- | ----- |
| WO 9403021 A1 | 03/02/94 | AU 671842 B | | 12/09/96 |
| | | AU 4503793 A | | 14/02/94 |
| | | DE 69322784 D,T | | 10/06/99 |
| | | EP 0650652 A,B | | 03/05/95 |
| | | SE 0650652 T3 | | |
| | | FI 91349 B,C | | 28/02/94 |
| | | FI 923297 D | | 00/00/00 |
| | | JP 9502310 T | | 04/03/97 |
| | | NZ 253722 A | | 21/12/95 |
| | | US 5570358 A | | 29/10/96 |
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